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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/873,567	06/04/2001	Joseph P. Meehan	US 010229	4213
24737	7590	12/17/2004	EXAMINER	
PHILIPS INTELLECTUAL PROPERTY & STANDARDS P.O. BOX 3001 BRIARCLIFF MANOR, NY 10510			TRAN, KHANH C	
			ART UNIT	PAPER NUMBER
			2631	

DATE MAILED: 12/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/873,567

Applicant(s)

MEEHAN ET AL.

Examiner

Khanh Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6 and 11-15 is/are allowed.
- 6) ☒ Claim(s) 1,2 and 16 is/are rejected.
- 7) ☒ Claim(s) 3-5,7-10,17 and 18 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/09/2004.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Claim Objections

1. Claim 7 is objected to because of the following informalities: in line 3, "which receive" should be changed to --, each receiving --; in line 4, "outputs" should be changed to -- outputting --; in line 6, "generating" should be changed to --, each generating --. Appropriate correction is required.

2. Claim 17 is objected to because of the following informalities: in line 9, "converter" should be changed to -- converters --. Appropriate correction is required.

3. Claim 18 is objected to because of the following informalities: in line 9, "converter" should be changed to -- converters --. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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4. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Samuelli et al. U.S. Patent 6,304,621 B1.

Regarding claim 1, figure 3B illustrates a symbol recovery loop 128 wherein the signals from adaptive equalizer 120 pass to symbol recovery loop 128. Output from the symbol recovery loop 128 is introduced to the variable interpolator 112; see column 5, lines 15-25. The symbol recovery loop 128 is inherently a timing recovery loop, and the symbol recovery loop 128 generates a timing recovery loop signal based on output signal from adaptive equalizer 120. The output signal from adaptive equalizer 120 corresponds to an equalized feedback signal.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Samuelli et al. U.S. Patent 6,304,621 B1.

Regarding claim 2, figure 3A illustrates an embodiment for providing multi-mode variable rate digital cable receiver. Figure 3B discloses relevant components for establishing prima facie obviousness under USC 103 rejection.

In column 4, line 5 through column 5 line 25, Figure 3B illustrates a quadrature amplitude modulated receiver including a variable interpolator 112. Samueli et al. does not expressly disclose a sample rate converter as claimed in the instant application. However, by definition, the interpolator is a component for generating additional values between sampled values. As a result of that, it would have been obvious for one of ordinary skill in the art at the time the invention was made that the variable interpolator 112 as taught by Samueli et al. changes the sampling rate of a digital input into another sampling rate by the interpolation function. The motivation is that the characteristic of the interpolator would increase the sampling rate through interpolation process, and by doing that, the variable interpolator would respectively convert a input stream at one sampling rate and output a stream at another sampling rate. The variable interpolator 112 further receives as an input a symbol recovery loop signal. Hence, the variable interpolator 112 operates in responsive to the symbol recovery loop signal.

The quadrature amplitude modulated receiver further includes an adaptive equalizer 120. The adaptive equalizer 120 corresponds in construction to the adaptive equalizer 64 shown in figure 2, wherein the equalizer 64 includes a feed forward equalizer; see column 3, lines 35-50. The adaptive equalizer 120 generates an equalized feedback signal based on the sampling rate outputted from the variable interpolator 112.

The quadrature amplitude modulated receiver further includes a symbol recovery loop 128 for generating a timing recovery loop signal based upon the equalized feedback signal from the adaptive equalizer 120.

Figure 3A together with figure 3B constitutes analog and digital front end of a television receiver as appreciated by a person of average skill in the art.

Regarding claim 16, claim 16 and claim 2 have similar scope for the following reasons. Claim 2 claims a timing recovery loop comprises components that can perform the steps in claim 16. As recited in claim 1, the quadrature amplitude modulated receiver as taught by Samuelli et al. includes an adaptive equalizer 120 responsive to the symbol recovery loop signal, the adaptive equalizer 120 for generating an equalized feedback signal based on the symbol stream produced by the variable interpolator 112 at a sampling rate, the symbol recovery loop 128 for generating the symbol recovery loop signal based on the equalized feedback signal. The symbol recovery loop signal is applied to the variable interpolator 112 to output a symbol stream at the controlled sample rate. In light of the foregoing discussion, claim 16 is rejected on the same reasons and motivation as stated in claim 2.

Allowable Subject Matter

6. Claims 3-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 3, claim is indicated allowable because the closest prior art of record, Samuelli et al. US 6,304,621 B1, discloses a carrier recovery loop 124 in figure

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3B, however, does not teach or suggest "the carrier recovery circuit electrically coupling the sample rate converter to the forward equalizer" as claimed in the instant application.

7. Claim 6 is allowed.

Regarding claim 6, the claim is allowed over prior art of record because the closest prior art of record, Strolle et al. US 6,560,299 B1, teaches a diversity receiver with joint signal processing, coupled to a composite antenna having first and second antennas configured to provide diversity reception. However, Strolle et al. does not teach or suggest N timing recovery loops electrically coupled to the N antennae as set forth in the claim.

8. Claims 7-10 are allowed.

Regarding claim 7, the claim is allowed over prior art of record because the closest prior art of record, Strolle et al. US 6,560,299 B1, teaches a diversity receiver with joint signal processing, coupled to a composite antenna having first and second antennas configured to provide diversity reception. However, Strolle et al. does not teach or suggest, "a timing recovery circuit generating the TR control signal based upon the N equalized feedback signals" as claimed in the instant application.

9. Claims 11-15 are allowed.

Regarding claim 11, the claim is allowed over prior art of record because the closest prior art of record, Strolle et al. US 6,560,299 B1, teaches a diversity receiver

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with joint signal processing, coupled to a composite antenna having first and second antennas configured to provide diversity reception. However, Strolle et al. does not teach or suggest, "a timing recovery circuit generating the TR control signal based upon a selected one of the N equalized feedback signals" as claimed in the instant application.

10. Claim 17 is allowed.

Regarding claim 17, the claim is allowed over prior art of record because the closest prior art of record, Strolle et al. US 6,560,299 B1, teaches a diversity receiver with joint signal processing, coupled to a composite antenna having first and second antennas configured to provide diversity reception. However, Strolle et al. does not teach or suggest the following steps, "producing the TR control signal based on the combined equalized feedback signals" and "applying the TR control signal to the sample rate converters to thereby permit the N sample rate converters to output N symbol streams at the controlled sample rate" as claimed in the instant application.

11. Claim 18 is allowed.

Regarding claim 18, the claim is allowed over prior art of record because the closest prior art of record, Strolle et al. US 6,560,299 B1, teaches a diversity receiver with joint signal processing, coupled to a composite antenna having first and second antennas configured to provide diversity reception. However, Strolle et al. does not teach or suggest the following steps, "producing the TR control signal based on the

selected equalized feedback signal and “applying the TR control signal to the sample rate converters to thereby permit the N sample rate converters to output N symbol streams at the controlled sample rate” as claimed in the instant application.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Strolle et al. U.S. Patent 6,560,299 B1 discloses “Diversity Receiver With Joint Signal Processing”.

Liu et al. U.S. Patent 6,775,334 B1 discloses “Equalization And Decision-Directed Loops With Trellis Demodulation In High Definition TV”.

Tierno U.S. Patent 6,650,699 B1 discloses “Methods And Apparatus For Timing Recovery From A Sampled And Equalized Data Signal”.

Scarpa et al. U.S. Patent 5,673,293 discloses “Method And Apparatus For Demodulating QAM And VSB signals”.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KCT

Khanh Cong Tran

12/10/2004

KHANH TRAN